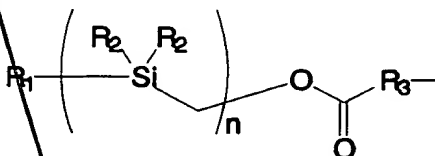


THAT WHICH IS CLAIMED IS:

1. A non-thrombogenic coating composition for blood-contacting surfaces, said composition comprising a covalent complex of from 1 to 30 hydrophobic silyl moieties of Formula I:



I

wherein

R_1 is an C_{1-8} alkyl or C_{6-32} aryl group,
 each R_2 is independently selected from the group consisting of C_{1-8} alkyl and C_{6-32} aryl
 R_3 is N or O, and
 n is a number from 1 to 10
 directly bound to sodium heparin via covalent bonding.

2. The composition according to Claim 1, wherein said hydrophobic silyl moieties bind to said surfaces via hydrophobic bonding interactions.

3. The composition according to Claim 1, wherein said complex comprises from 2 to 25 hydrophobic silyl moieties covalently bound to one heparin molecule.

4. The composition according to Claim 1, wherein R_1 is benzyl in said hydrophobic silyl moiety of Formula I.

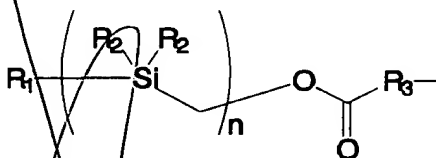
5. The composition according to Claim 1, wherein each R_2 is a alkyl in said hydrophobic silyl moiety of Formula I.

6. The composition according to Claim 1, wherein n is 2 or 3 in said hydrophobic silyl moiety of Formula I.

7. The composition according to Claim 1, wherein said complex is [benzyl-bis(dimethylsilylmethyl)]-(N-heparinyl)-carbamate.

8. The composition according to Claim 1, wherein said complex is [benzyl-tris(dimethylsilylmethyl)]-(N-heparinyl)-carbamate.

9. A non-thrombogenic medical device comprising surfaces for contacting blood, said surfaces having coated thereon an non-thrombogenic coating composition comprising a covalent complex of from 1 to 30 hydrophobic silyl moieties of Formula I:



I

wherein

R_1 is an C_{1-8} alkyl or C_{6-32} aryl group,
each R_2 is independently selected from the group consisting of C_{1-8} alkyl and C_{6-32} aryl,
 R_3 is N or O, and
 n is a number from 1 to 10
directly bound to heparin via covalent bonding.

10. The device according to Claim 9, wherein said hydrophobic silyl moieties bind to said surfaces via hydrophobic bonding interactions.

11. The device according to Claim 9, wherein said complex comprises from 2 to 25 hydrophobic silyl moieties covalently bound to one heparin molecule.

12. The device according to Claim 9, wherein R_1 is benzyl in said hydrophobic silyl moiety of Formula I.

13. The device according to Claim 9, wherein each R_2 is a alkyl in said hydrophobic silyl moiety of Formula I.

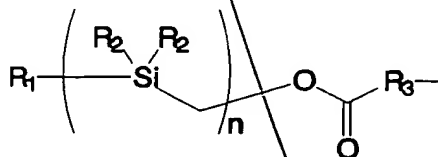
14. The device according to Claim 9, wherein n is 2 or 3 in said hydrophobic silyl moiety of Formula I.

15. The device according to Claim 9, wherein said complex is [benzyl-bis(dimethylsilylmethyl)]-(N-heparinyl)-carbamate.

16. The device according to Claim 9, wherein said complex is [benzyl-tris(dimethylsilylmethyl)]-(N-heparinyl)-carbamate.

17. The device according to Claim 9, wherein said device is selected from the group consisting of oxygenators, oxygenator circuits, heart-lung bypass circuits, blood gas exchange devices, blood filters, artificial blood vessels, artificial valves, prosthetics, stents, catheters, heat exchangers, and hypodermic needles.

18. A method for rendering blood-contacting surfaces of a medical device non-thrombogenic, said method comprising coating said surfaces with an non-thrombogenic coating composition comprising a covalent complex of from 1 to 30 hydrophobic silyl moieties of Formula I:



I

wherein

R_1 is an C_{1-8} alkyl or C_{6-32} aryl group,
each R_2 is independently selected from the group consisting of C_{1-8} alkyl and C_{6-32} aryl,
 R_3 is N or O, and
 n is a number from 1 to 10
directly bound to heparin via covalent bonding.

1 19. The method according to Claim 18, wherein said
2 hydrophobic silyl moieties bind to said surfaces via
3 hydrophobic bonding interactions.

1 20. The method according to Claim 18, wherein said
2 complex comprises from 2 to 25 hydrophobic silyl moieties
3 covalently bound to one heparin molecule.

1 21. The method according to Claim 18, wherein R_1 is
2 benzyl in said hydrophobic silyl moiety of Formula I.

1 22. The method according to Claim 18, wherein each
2 R_2 is a alkyl in said hydrophobic silyl moiety of Formula I.

1 23. The method according to Claim 18, wherein n is
2 2 or 3 in said hydrophobic silyl moiety of Formula I.

1 24. The method according to Claim 18, wherein said
2 complex is [benzyl-bis(dimethylsilylmethyl)]-(N-heparinyl)-
3 carbamate.

1 25. The method according to Claim 18, wherein said
2 complex is [benzyl-tris(dimethylsilylmethyl)]-(N-heparinyl)-
3 carbamate.

1 26. The method according to Claim 18, wherein
2 further comprising the step of solubilizing said complex in a
3 solvent prior to said step of coating said surface.

1 27. The method according to Claim 18, wherein said
2 step of coating said surface comprises dipping said surface
3 into said coating composition comprising said complex.

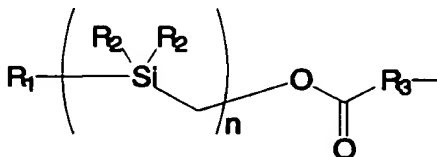
1 28. The method according to Claim 18, wherein said
2 step of coating said surface comprises pumping said coating
3 composition comprising said complex onto said surface.

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**NON-THROMBOGENIC COATING COMPOSITION
AND METHODS FOR USING SAME**

ABSTRACT OF THE DISCLOSURE

The present invention provides an anti-thrombogenic coating composition for blood-contacting surfaces. The coating comprises a covalent complex of from 1 to 30 hydrophobic silyl moieties of Formula I:



I

wherein R_1 is an C_{1-8} alkyl or C_{6-32} aryl group, each R_2 is independently selected from the group consisting of C_{1-8} alkyl and C_{6-32} aryl, R_3 is N or O, and n is a number from 1 to 10, directly bound to a heparin molecule via covalent bonding.